METHOD OF SEAMING AND EXPANDING AMORPHOUS PATTERNS

ABSTRACT OF THE DISCLOSURE

The present invention provides a method for creating amorphous patterns based on a constrained Voronoi tesselation of 2-space that can be tiled. There are three basic steps required to generate a constrained Voronoi tesselation of 2-space: 1) nucleation point placement; 2) Delauney triangulation of the nucleation points; and 3) polygon extraction from the Delauney triangulated space. The tiling feature is accomplished by modifying only the nucleation point portion of the algorithm. The method of the present invention, for creating an amorphous two-dimensional pattern of interlocking two-dimensional geometrical shapes having at least two opposing edges which can be tiled together, comprises the steps of: (a) specifying the width x_{max} of the pattern measured in direction x between the opposing edges; (b) adding a computational border region of width B to the pattern along one of the edges located at the x distance x_{max}; (c) computationally generating (x,y) coordinates of a nucleation point having x coordinates between 0 and x_{max}; (d) selecting nucleation points having x coordinates between 0 and B and copying them into the computational border region by adding x_{max} to their x coordinate value; (e) comparing both the computationally generated nucleation point and the corresponding copied nucleation point in the computational border against all previously generated nucleation points; and (f) repeating steps (c) through (e) until the desired number of nucleation points has been generated. To complete the pattern formation process, the additional steps of: (g) performing a Delaunay triangulation on the nucleation points; and (h) performing a Voronoi tessellation on the nucleation points to form two-dimensional geometrical shapes are included. Patterns having two pairs of opposing edges which may be tiled together may be generated by providing computational borders in two mutually orthogonal coordinate directions.